THE MEDICAL COLLEGE OF GEORGIA
The Health Sciences University of the State of Georgia

TODAY

Winter 1989 Volume 17, Number 4

Introduction

Cancer wages a dirty war.

It attacks indiscriminately, viciously, insidiously. Small wonder the disease instills such fear at every level of society.

But in an increasing number of cases, that fear is being replaced with hope, and ultimately, triumph. Cancer victims are no longer defenseless. The medical community is fighting back.

This edition of *Medical College of Georgia Today* introduces you to some warriors in the fight against cancer. They include behind-the-scences people like Dr. Guy Faguet, an MCG professor whose research may hold the key to a cure for a form of adult leukemia, and Dr. Barbara Chang, who chairs a committee to distribute funds to cancer researchers.

They include people like Dr. P. Charlton Davis, who treats pediatric cancer patients. During his career, he has witnessed—and helped ensure—a dramatic increase in the percentage of children who overcome the disease.

And they include those on the front lines—people like Richard Beck, a child with leukemia, and Gladys Williams, a skin cancer patient who has learned to live and prosper with an artificial nose. These people battle cancer with their spirit and determination just as surely as the medical community battles it with technology. Together, they are emerging triumphant.

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The Medical College of Georgia is the health sciences university of the University System of Georgia. Focusing on health care education, research and patient care, the Augusta-based institution consists of MCG Hospital, more than 80 support clinics, statewide outreach programs and the Schools of Allied Health Sciences, Dentistry, Graduate Studies, Medicine and Nursing.

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Dermatologists at the Medical College of Georgia are seeing an ever-growing number of skin cancer cases in young people, according to Dr. Jack L. Lesher Jr., assistant professor of dermatology at MCG.

"We're seeing people in their 30s and 40s with skin cancer, and even some in their 20s," he said. "In part, this may reflect increasing interest in sun worship."

The most common form of skin cancer is basal cell carcinoma, Dr. Lesher said. It starts as a pearly-looking bump on the skin which, as it grows, may ulcerate in the center to form a rolled border or crater, he said.

"If they get big, they may invade and cause local destruction of tissue," Dr. Lesher said.

Basal cell carcinomas usually form in sun-exposed areas, particularly the face. This type of skin cancer rarely moves through the blood stream to other parts of the body, Dr. Lesher said.

Squamous cell carcinomas also tend to develop in sun-exposed areas.

"They start out as an eroded or ulcerated lesion that will gradually grow and will bleed and won't heal," Dr. Lesher said. These generally appear on the face, hands and arms, but they may also occur in non-sun-exposed areas, he said.

Malignant melanoma is potentially the most lethal type of skin cancer, Dr. Lesher said. It often starts out as a dark or black lesion that may resemble a mole, or it may appear as a color change in an existing mole.

"If (malignant melanoma is) caught early, there's a good prognosis," he said.

In general, the most com-

The Steep Price of Sunbathing

mon treatment for these cancers is surgery, Dr. Lesher said. "With surgery, the pathologist can help you determine with reasonable certainty that you've gotten all of the tumor out."

Dr. Lesher said his primary concerns in treating skin cancer are eradicating the cancer and giving the best cosmetic result.

Dermatologists often use curettage and desiccation as a treatment for small basal cell carcinomas. Once a biopsy has determined the presence of cancer, the doctor scrapes and burns the lesion until it is gone.

In larger basal cell carcinomas, doctors generally remove the cancerous area and take the sample to a pathologist to be sure they have removed the whole tumor. After pathology determines that the tumor is gone, the doctor most often closes the incision by stitching the two edges of tissue together. Occasionally, the surgical defect is closed by one of two other methods.

"We'll do a flap using tissue near the lesion, cutting tissue near it and tightening or pulling it over (the defect) to cover," Dr. Lesher said. "Or, we'll do a graft where we borrow skin (from another area), make an incision and excise skin there and use it to fill in the defect where the cancer was."

For larger, more complicated cancers, Dr. Lesher said he usually calls in a plastic surgeon to ensure complete removal of the tumor with good cosmetic results.

Chemotherapy is occasionally used to treat advanced basal cell carcinoma, Dr. Lesher said. "In the elderly or another patient who you think couldn't tolerate surgery, radiation therapy is an alternative," he said. Fifteen to 20 treatments are usually required, he said.

The treatment of squamous cell carcinoma is much like that of basal cell carcinoma. "But we don't tend to use curettage and desiccation as often (for squamous cell carcinoma)," he said.

Treatment of malignant melanoma is directly related to the size and depth of the cancer and how early it is caught, Dr. Lesher said.

"Some of these have a phase of spreading out on the skin," he said. "If caught early, we can get it while it's still a thin melanoma."

As this type of cancer progresses, Dr. Lesher said the prognosis worsens because of the danger that the cancer will spread through the lymphatic system or through the blood stream.

The dermatologist performs an excisional biopsy to treat malignant melanoma. "We try to get the whole lesion out," he said.

The pathologist examines the sample under a microscope which has a gauge that measures thickness. Based on the measurement, the doctor can get an idea of the patient's prognosis.

If the melanoma is moderately thick to thick, the patient will need a lymph node dissection and a computed tomography scan of various organs to determine if the cancer has spread, Dr. Lesher said. "Although excision may be all that is necessary, chemotherapy and immunotherapy of various sorts may be necessary for treating advanced melanomas," he said.

Dermatologists at MCG are trying to educate the general public about early identification of skin cancer, Dr. Lesher said. They encourage patients to recognize new growths and lesions that won't heal.

"In terms of recognizing melanomas, we're telling people to remember their A-B-C-D-Es," he said.

These letters stand for key words in identifying this type of skin cancer.

"Look at the asymmetry (A) of a lesion, a place on the skin that has an unusual pattern," Dr. Lesher said.

"Look at the border (B). Is it irregular, scalloped or indented? Look at the color (C). Black and different shades of black, reds and whites" indicate trouble, he said.

Other things to look at are diameter (D) and elevation (E).

"We worry more about dark lesions that are greater than six millimeters, pencil-eraser sized . . . and we worry if you have an area that keeps growing outward in the lesion," Dr. Lesher said.

Most skin cancer can be prevented, Dr. Lesher said.

"We're telling our patients to avoid spending a lot of time in the sun during the peak hours, between 10 a.m. and 3 p.m.," he said. "If you're out, wear protective clothing and sunscreens. The fairer your skin, the more protection you need."

—Karin Calloway

Heads Held High

When Gladys Williams learned she would lose most of her nose to skin cancer, she thought death would be preferable to the disfigurement.

"I said I wouldn't want my children to see me like that," Mrs. Williams recalled. "I said I'd rather die."

Two years later, Mrs. Williams is very much alive. She's an active 79-year-old who lives in her own home and takes great pleasure in grandchildren, gardening and dining out. Yes, she's disfigured, but a death wish is the farthest thing from her mind these days. The Medical College of Georgia School of Dentistry saw to that.

After her skin cancer surgery at MCG, Mrs. Williams was told about reconstructive surgery—a method of taking tissue from other parts of the face to construct a new nose. But she had serious reservations. The tissue removal would result in a permanent scar. And while she deliberated, she suffered a stroke and heart attack within rapid succession. The thought of more surgery was more than she could take.

Mrs. Williams opted for another route. She was referred to Dr. Gregory Parr, chief of the dental school's maxillofacial services section of the prosthodontics department. The department's mission: to create an artificial nose for Mrs. Williams. The project seemed implausible—almost impossible—to Mrs. Williams. But for the department, it was all in a day's work. And as Mrs. Williams was about to learn, the staff's work yields masterpieces.

Mrs. Williams happily displays one of those masterpieces every day of her life. But the casual observer would never know it; the artificial nose looks uncannily authentic.

"I feel good with it; I don't even

know it's there," she said. "I pray every night that (the department) can continue to do this."

Lewis Hinely, the department's medical illustrator who helped create the nose, has a more modest assessment of the work: "It's a satisfying thing to come up with a prosthesis that looks like it belongs to the patient," he said.

The artificial nose has freed Mrs. Williams to live a normal life. She was self-conscious with it at first, but then realized nobody could tell it was artificial. A small seam at the tip of the nose is covered by her glasses and the seam at the bottom is unnoticeable unless she tilts her head far back.

The nose is also quite resilient. "I've been bumped and knocked, and it's never come off," Mrs. Williams said. "You've got to pull it off." She takes the nose off at bedtime, then glues it on the next morning, which takes only a few seconds.

The nose does have a couple of disadvantages, however, including a limited lifespan. The edges of artificial prostheses begin to deteriorate and the color wears off after a year to 18 months. Mrs. Williams is on her third nose—the first two lasted about eight months each. This one is thicker, though, and should last longer.

And facial prostheses are expensive, usually costing between $1,000 and $2,000. But insurance generally covers the expense, as is the case for Mrs. Williams.

And she doesn't dwell on disadvantages. "You've just got to accept things and go on," she said. She is, however, a firm believer in prevention. "I tell young people all the time to stay out of the sun (the cause of her skin cancer)," she said. "If my kids lay out in it, I'll holler just as loud as I can and embarrass them to death. I tell them I'm just trying to save them a lot of pain and suffering."

The ability to help alleviate that pain is what drew Dr. Barry Goldman, director of postdoctoral prosthodontics at MCG, to the field some 17 years ago. A dental school graduate of Emory University, he was first exposed to maxillofacial prosthodontics during the Vietnam War. The

Gladys Williams quickly applies her artificial nose each morning.

Medical illustrator Lewis Hinely shapes and paints facial details on an artificial nose.

skills, which he had learned nothing about in school, were desperately needed by injured soldiers. Dr. Goldman learned on the job.

"I literally put people's jaws and faces back together," he said. After active duty and residency training, he joined MCG in 1972 to start the maxillofacial prosthodontics program. Shortly thereafter, he approached Mr. Hinely, an MCG medical illustration graduate who had joined the MCG dental school as a medical illustrator.

"(Dr. Goldman) stopped me in the hall one day and asked me to help him color a prosthesis. I said sure and we moved on from there," Mr. Hinely said.

He devotes about half his time to the prostheses (Drs. Goldman and Parr get referrals from physicians) and the other half to other medical illustration work for the school.

The department treats about six patients at any given time. They come from throughout the Southeast; MCG is one of the few institutions in the region to offer the service. In fact, the department would probably have many more patients if only they knew the service was available.

"There are people out there who need the service and don't know it exists," Mr. Hinely said. "That's unfortunate."

That service is quite encompassing. The department makes artificial ears, noses, palates and eyes. Artificial eyes include orbital protheses (the eye plus the lid) and ocular prostheses (only the eye, which Dr. Parr makes.) The department also offers intra-oral work such as special dentures for patients with cleft palates. About two-thirds of the referrals are cancer patients.

Dr. Goldman, who also trains residents in the field, often begins working with the patients upon diagnosis of their cancer.

"We form a treatment plan with the surgeon," he said. "Sometimes, a surgeon's not aware of what factors might make for the best prosthesis, and we may not be aware of where all the cancer is." So the two share information. Dr. Goldman often observes the surgery, noting how extensive the damage is and advising the surgeon about how incisions or skin grafts will affect a prosthesis.

If the patient's palate must be removed, Dr. Goldman constructs a palatal prosthesis before surgery and applies it during surgery, as soon as the palate is removed.

"We always reconstruct the mouth first if the patient has multiple problems," Dr. Goldman said. "That allows him to speak and swallow." The prosthesis, which provides support for the facial prosthesis, also includes dentures if the patient loses teeth during surgery.

The palatal prosthesis is only temporary, but seals the hole for the weeks it will take to construct a permanent one.

Dr. Goldman had one such patient who appeared on television, speaking completely intelligibly, only five days after surgery. "Nobody knew his palate was gone," Dr. Goldman said. The palate is made from hard plastic and wire, covered with a soft lining for comfort.

Other prostheses—noses, eyes and ears—cannot be applied until months after surgery so the face can heal.

The first step at that point is to make a dental alginate impression of the entire face or enough to establish symmetry for the area involved. Mr. Hinely paints the alginate onto the face, then covers it with an orthopedic bandage. "The alginate material is too soft to maintain the shape by itself," Mr. Hinely said.

At this point, Mr. Hinely has a plaster model of the face, including the defect. He then sculpts the missing part of the face. When the sculpture fits the face, he uses it to make a mold. He then packs the mold with silicone rubber. That silicone rubber becomes the artificial feature.

Next, the patient becomes a model, sitting in front of Mr. Hinely while he paints the silicone rubber to resemble the rest of the face as closely as possible. The prostheses are intricately detailed, including veins, freckles or other skin characteristics.

"The painting is exciting and challenging," Mr. Hinely said. "So is the sculpting. You start with zero and come up with something to match the patient's face."

Artificial eyes are made of acrylic, not glass. "They haven't been made of glass in this country since before World War II," Mr. Hinely said.

Dr. Parr makes the shell-shaped eye prostheses, again using patients as models to match the eye color and fine details. He recommends that those with eye prostheses wear eye glasses to protect the remaining eye and to minimize the artificial look. Orbital prostheses must be taken out overnight, but the ocular ones stay in from a week to several months at a time.

The overwhelming majority of patients are pleased with their prostheses, Mr. Hinely said. "We've had a few patients who just could not adjust to using prostheses, but for the most part, they're very happy. It's so much better than they believed it could be.

"Your face is so much of your identity. When you lose part of it, you lose part of your identity. Without a prosthesis, these people hide in the closet. You can tell a noticeable difference in the way they feel about themselves after they get a prosthesis."

Dr. Goldman concurs, noting that part of the staff's job is to address the wide range of emotions that accompanies such procedures.

"We're their amateur psychologists," he said. "If we didn't understand what they were going through and empathize with them, they'd be in bad shape. I care about these people. I push them on if I see them getting a little discouraged. I never let the staff or residents feel sorry for them. I just won't let them try to act like they're anything other than normal."

The prostheses go a long way toward ensuring that feeling of normalcy. In fact, some patients obtain a prosthesis to use only until reconstructive surgery can be performed, but end up opting to keep the prosthesis itself because of their satisfaction with it.

And the benefits transcend the psychological boost. "These things aren't just cosmetic," Mr. Hinely said. "They have functional applications, too. For instance, if a nose is missing, the throat often feels dry without a prosthesis." An artificial ear improves hearing 30 to 40 percent.

Mr. Hinely teaches an introductory facial prosthetic course to medical illustration graduate students at MCG and hopes some of his students will enter the field and grow to love it as much as he has.

"This work never depresses me," he said. "The patients feel so much better when we're done."

Dr. Goldman agrees. "What I like best is seeing a patient get back into society as a useful member. I get very emotional about that," he said. "I guess that's what makes all the work and effort really worthwhile to me." ■

—Christine Hurley Deriso

Targeting a Deep-seated Problem

He's about 14 or 15 years old, probably white or native American, and has friends or family who use smokeless tobacco.

That's okay with him, because he thinks chewing is safer than smoking cigarettes.

And four or five times a day, he also has a pinch between his cheek and gum.

That is a composite sketch of the average teenage user of smokeless tobacco in the Southeast, according to results of a survey conducted by two professors at the Medical College of Georgia.

The survey, conducted in four states during the 1986-87 academic year, is the largest sampling of smokeless tobacco use ever conducted in the Southeast, according to researchers Dr. Jim Barenie, acting chairman of pediatric dentistry at the MCG School of Dentistry, and Dr. Bill Riley, a psychologist who is an assistant professor in the MCG Department of Psychiatry.

More than 11,000 teenagers from 20 cities in Georgia, Florida, South Carolina and Tennessee responded to a questionnaire funded by a grant from the American Society of Dentistry for Children. And the MCG researchers hope the survey results will help prevention and intervention projects focus on groups most likely to use smokeless tobacco.

Research has linked long-term use of smokeless tobacco products to such things as receding gums; leukoplakia, or white lesions on the tongue, inside of cheek or gums; and oral cancer.

Tobacco products often contain levels of certain carcinogens that are 10,000 times greater than levels allowed in food products, Dr. Barenie said.

The MCG survey, which traces its beginnings to 1985 and the tobacco interests of former U.S. Surgeon General and then-MCG President Dr. Jesse L. Steinfeld, indicated good news and bad news about teen-agers' smokeless tobacco usage.

The bad news from the survey is most of the teenagers said they had tried smokeless tobacco, and a large number try it at a very young age.

"I think *when* they started using the products was surprising to both of us," Dr. Riley said.

Most of the surveyed students, who ranged in age from 14 to 18, said they were 11 or 12 when they first tried smokeless tobacco, and about 30 percent of those responding said they tried it before age 10, Dr. Riley said.

"Those are the ones who are the heaviest users as well," Dr. Barenie said, "in that the younger they start, the more likely they are to keep using."

"They are the group we really have to focus on," Dr. Riley said.

Getting that group's attention might be difficult, he said.

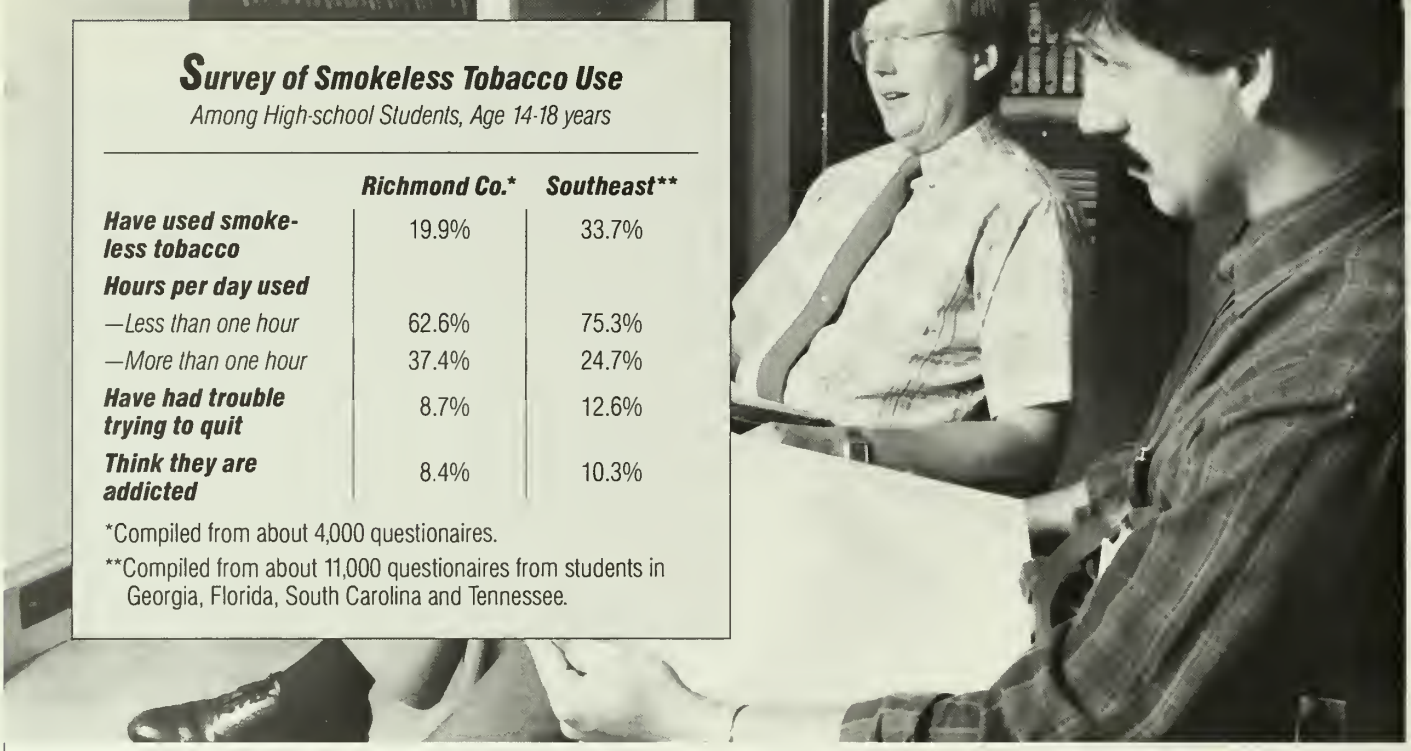
"Fear tactics seldom work with adolescents, especially if their own personal experience isn't bad. 'I've used this for a year and nothing has happened to me,' that's the way they feel," he said.

Both researchers said smokeless tobacco is an abuse much more insidious than alcohol or drug abuse, as it can be three to four years before signs of disease are detected.

But if an adolescent stops using smokeless tobacco, the changes can come quickly, Dr. Barenie said.

"In our clinic, with adolescents who have been using smokeless tobacco one, two or three years, we notice almost immediate changes," he said.

Drs. Jim Barenie (left) and Bill Riley scan results from 11,000 questionnaires returned from four states.



Survey of Smokeless Tobacco Use

Among High-school Students, Age 14-18 years

	Richmond Co.*	Southeast**
Have used smokeless tobacco	19.9%	33.7%
Hours per day used		
—*Less than one hour*	62.6%	75.3%
—*More than one hour*	37.4%	24.7%
Have had trouble trying to quit	8.7%	12.6%
Think they are addicted	8.4%	10.3%

*Compiled from about 4,000 questionaires.

**Compiled from about 11,000 questionaires from students in Georgia, Florida, South Carolina and Tennessee.

Symptoms such as whitish plaque, wrinkled mucus membranes and red, irritated areas usually return to normal appearance after the smokeless tobacco use is stopped, Dr. Barenie said.

Also according to the survey, about 37 percent of the students who said they use smokeless tobacco said they had been using it for a year or more.

Additionally, 33.7 percent of the surveyed students said they had tried smokeless tobacco at least once. About 15 percent of all females in the survey said they had tried it, while about 53 percent of the surveyed males said they had tried it.

The good news from the survey is that although a large number of the teenagers said they had tried smokeless tobacco, most stopped using it, according to Dr. Barenie.

"...About half of them that try it don't like it," he said. About 50 percent of those responding to the survey said they tried smokeless tobacco only a few times.

The most common reasons cited in the survey for stopping were possible health implications and bad taste.

"About half said they were concerned that it was unhealthy," Dr. Riley said. "The rest said they didn't like the taste or that it was too much trouble."

Few respondents said they stopped using smokeless tobacco because of pressure from family or friends, he said.

Statistics from the survey indicate about 80 percent of the students were most influenced to try smokeless tobacco by a friend who also used such products. Family members played a role in about 23 percent of the other cases, while advertisements accounted for only about 15.3 percent of the influence.

The low number in the advertisement category is particularly interesting, Dr. Barenie said, as groups interested in preventing smokeless tobacco use have focused their campaigns on banning smokeless tobacco ads.

The regional survey actually got its start in a smaller survey of about 4,000 Richmond County high school students.

That survey, conducted during the 1985-86 school term, was the model for the regional questionnaire. And in most cases, the questions yielded similar results both in Augusta and at the regional level.

Questions were modified to fine-tune the survey after its trial run in Augusta, Dr. Riley said.

In fact, the questions are so specific on the regional survey the results can be used to draw a composite character sketch of a typical teen-age smokeless tobacco user.

According to the Southeast survey, the teen-age user is most often a male, either white or native American, who often prefers country-western music. He probably first tried smokeless tobacco when he was 11 or 12 years old, has friends or family who use it, and thinks it is safer to chew than to smoke cigarettes.

Nevertheless, average teen-age users also tend to use other substances, such as alcohol or cigarettes, according to the survey.

Blacks seldom use smokeless tobacco and are a low-risk group, according to survey results. Only about 28 percent of the black males responding, and 10 to 15 percent of the blacks overall in the survey, said they had tried smokeless tobacco products, Dr. Riley said.

And as the level of involvement in risk-taking activities increases, so does the likelihood that the person uses smokeless tobacco or other substances, Dr. Riley said.

The researchers now are concentrating on further analysis of the research data, separating the responses of males and females and comparing and contrasting the smokeless tobacco use of the two sexes.

They hope to better define the high-risk groups so they can apply for grants to implement prevention and intervention projects.

Dr. Riley presented a paper on the smokeless tobacco survey at the March meeting of the International Association of Dental Research in Montreal, Canada.

—Stephanie Neal

A Deadly Excess

The factory is in constant production.

Its products are red cells that carry oxygen, white cells that fight infection, platelets that promote clotting.

"Those three major cell lines are always available, always maturing at a certain pace in the bone marrow," said Dr. Charles L. Lutcher, chief of the Section of Medical Hematology/ Oncology at the Medical College of Georgia.

The cells move out into the blood.

They work.

They die.

The production is constant, essential, well-balanced.

But it may become compromised.

"Probably the best way to think of it is basically the proliferation or accumulation of cells in the site that makes the blood," Dr. Lutcher said. "The usual checks and balances seem to be lost, so there is excess proliferation of cells, predominately in the bone marrow. Two-thirds of the patients you see have an excess of white cells."

This proliferation or accumulation is called leukemia.

"We do have a type of leukemia where all it is, is an increase in the number of cells that we usually see in the bone marrow," Dr. Lutcher said. "(But) 95 percent of the time, we are talking about white cells that, rather than come along in normal stages of maturation, are all very young. They are not able to go through the maturation stages that give you healthy cells."

They are blasts: huge numbers of these cells that take over the factory's production.

Red-cell production decreases.

Dr. Charles L. Lutcher examines patient Willie Jenkins.

Platelet-making capacity decreases.

The patient may feel tired, lethargic. He may bruise easily. The bruises don't dissipate normally. He may have trouble with bleeding and infections.

At MCG, Dr. Lutcher's section follows 80 to 100 patients at any one time who have chronic or acute forms of leukemia. The numbers tend to even out between men and women. The average age is 40 with acute types often occurring a little younger and chronic forms a little older.

Little is understood about the who's and how's of the disease.

"We know viral processes are important. We know certain (cell) markers are important," Dr. Lutcher said. Certain families seem to have a genetic disposition that lends itself to leukemia and many other forms of cancer.

"It may well be that you can get leukemia from five or six different sorts of insults. We don't have any protective measures except for avoiding known carcinogens. You don't want to be around nuclear waste, certain chemicals, excessive radiation," Dr. Lutcher said.

The sobering reality is that everyone is a potential leukemia victim.

The acute and chronic forms of the disease live up to their names.

The acute disease attacks with vigor. Cells get hung up in the blast stage.

"In the best scenario, with every treatment available, survival is approximately 40 months," Dr. Lutcher said. On average, patients live approximately 20 months.

Death results primarily from infection and less frequently from uncontrolled bleeding.

Platelets can be given to try to improve clotting, but most patients reach a point at which they don't respond to the transfused platelets.

The white cells are dysfunctional, even though there may be abnormally high numbers of them. Drugs given in an effort to destroy these abnormal cells can further compromise the immune system, leaving the body more susceptible to viruses and bacteria.

"We have to go in and wipe it out and hope that you survive the aggressive chemotherapy. Over 90 percent make it through this period," Dr. Lutcher said. "In that sort of setting, it turns out, fortunately, that the normal cells come back and re-populate the marrow." Doctors call this clinical remission. The patient feels better; his cells look normal. "Ironically, we've only killed a small fraction of the leukemic cells, thus continued treatment is necessary."

Chronic leukemia is a similar process that typically stretches over a longer period of time than its acute counterpart. But frequently, the ending is the same. Patients find themselves in a cycle of treatments and remissions. During remission, life is near normal.

Some patients who get the disease when they are older may actually die from an age-related disease rather than the leukemia. Chronic leukemia survivals vary from three to 15 years.

Today's arsenal against leukemia is comprised of some 30 drugs with 10 or less used most frequently, depending on the type of leukemia.

Major groups associated with cancer treatment, such as the American Society of Hematology and the American Society of Clinical Oncology, meet yearly to swap knowledge gained from experience with combinations of the various drugs and other treatment modalities.

"I don't think we have a new big hitter. We have lots of things we use," Dr. Lutcher said. And there are few new drugs on the horizon. "Right now, it's more of a consolidation, of finding out how to use old drugs new ways."

Also being explored are chemical mediators of the normal biological processes that cause the lumps, bumps and inflammation everyone has occasionally. "You find out what the mediators are and see if they have implications for leukemic disorders," Dr. Lutcher said.

Through cancer cytogenetics, doctors already can use a patient's chromosomes as a diagnostic and prognostic tool.

In the MCG Cancer Cytogenetics Laboratory, chromosomes taken from the bone marrow of leukemia patients are scrutinized by Dr. K.L. Satya-Prakash, lab director.

"The general concept is that cancer is a genetic disease," Dr. Satya-Prakash said. As early as 1912, a German embryologist was able to look at sea urchin eggs and note abnormal cell division. He hypothesized that cancer cells probably originate from normal cells with some kind of misdivision of the nucleus material.

Then in 1961, cancer and chromosomes were shown to be linked in a form of chronic leukemia: chronic myelogenous leukemia. A minute chromosome was always found in the bone marrow cells of patients with chronic myelogenous leukemia. This chromosome was named the Philadelphia chromosome honoring the city of its discovery. It was later learned that a piece of one of the 46 chromosomes had translocated to another chromosome; part of chromosome 22 was translocated to chromosome 9.

"Since 1970, researchers have looked at a large number of leukemias and other cancers and they have found that specific cancers have specific chromosomal abnormalities," Dr. Satya-Prakash said.

The information proves handy for diagnosis and treatment. Time, experience and burgeoning medical literature have taught specialists such as Dr. Satya-Prakash which chromosomal abnormality is associated with which cancer and how that particular patient should be clinically managed.

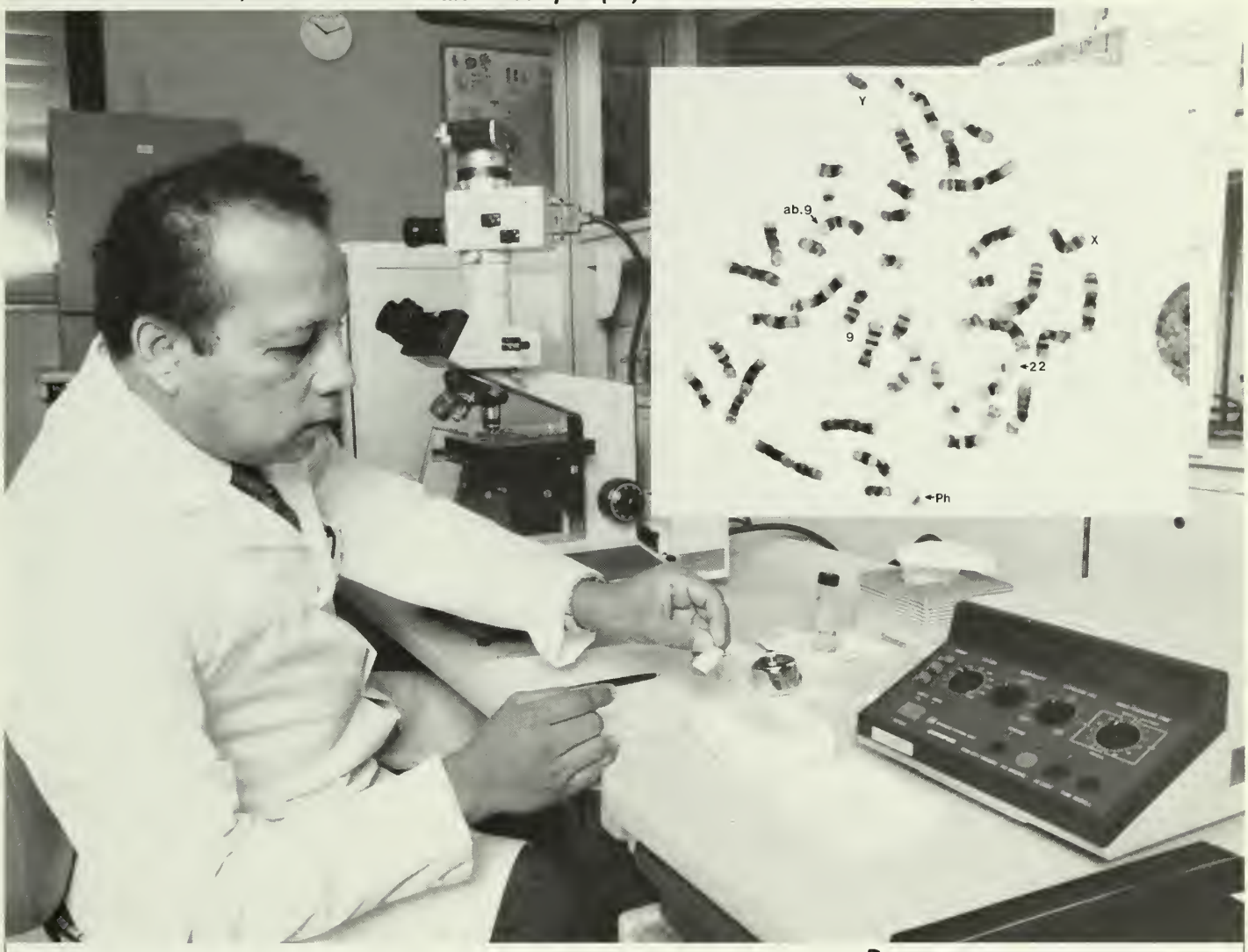
"We look at every chromosome under the microscope to see if it is normal or abnormal. And, if it is abnormal, what is the abnormality," Dr. Satya-Prakash said.

Those abnormalities include chromosome translocations, such as the Philadelphia chromosome; a chromosome with a piece missing; and an abnormal number, either too few or too many chromosomes.

"Most cancers do have a chromosomal defect associated with them," Dr. Satya-Prakash said. Based on the information the chromosome expert gives adult and pediatric hematologists/oncologists, doctors can design treatment protocols best for the specific disease.

The MCG Cancer Cytogenetics Laboratory also provides follow-up information about how well the treatment is working.

Also since the 1970s, a unique treatment approach that offers some additional hope to leukemia patients has



Insert shows chromosomes of patient with Chronic Myelogenous Leukemia. Normal chromosomes 9, 22 and sex chromosomes (XY) are labeled. The abnormal chromosome 9 (ab.9) and the Philadelphia (Ph) chromosome are identified by arrows.

Dr. K. L. Satya-Prakash in lab.

been available in the form of bone marrow transplants.

With this process, the ideal is for a patient to have an identical twin or a large number of siblings. For any single sibling, there is roughly a 25 percent chance of an adequate match.

Most transplant centers will only treat patients young enough and well enough to stand the best chance of surviving the rigorous ordeal. Experience since 1970 has shown that patients with an identical twin or a good match have about a 20 to 30 percent chance for long-term survival.

For a young patient with an identical match, there is the possibility of 10 to 15 years or more of essentially normal life.

In this process, patients are bombarded with radiation and drugs to wipe out their own bone marrow. Bone marrow then is taken from a sibling and given intravenously to the patient. The transfused marrow migrates to the bones and begins to grow.

A new twist to this process is the autologous transplant for those without an adequate marrow donor in which a patient's own marrow is given back to him. A phase of this is being used experimentally to treat leukemia. The theory is that by taking the bone marrow out of the body and cryopreserving it, the leukemia treatment can be given in higher doses to rid the body of any leukemic cells. The patient's own preserved blood is then given back to him and the blood cells then re-populate the marrow so that it can produce normal cells.

Neither type of transplant is currently available at MCG. Patients are sent to other centers for this phase of treatment.

Dr. Lutcher has gathered data to look at the needs and costs of such a program. He has learned that it can cost $250,000 annually to operate a single bed for bone marrow transplant patients.

This program also requires much support from other services such as immunology, infectious disease and the blood bank.

Dr. Lutcher says whether or not MCG gets this program has to be figured in with the total goals and needs of the institution.

For today, Dr. Lutcher tries not to use the word cure when he talks to his adult patients with leukemia. "When I talk to patients, I talk about average survivals and emphasize the occasional very long survivors."

MCG's survival rates are comparable to published standards. And although the treatment is sometimes difficult to tolerate, Dr. Lutcher says for many of his patients, the time they have is quality time.

"The vast majority of people realize their humanity in ways they never have before." ■

—Toni Baker

A Lifesaving Bullet

A Medical College of Georgia researcher is in search of a bullet.

Not just any bullet. The one he seeks is a lifesaver because it targets killer cancer cells.

"It's been called the magic bullet because it finds its target cancer cells and bypasses normal cells," said Dr. Guy Faguet, professor of medicine and associate professor of cell and molecular biology at MCG.

If successful, then Dr. Faguet might be on the verge of a cure for chronic lymphatic leukemia, or CLL.

He's optimistic but cautious: "Nothing in research is straightforward. There are always barriers. But I'm very hopeful it'll eventually work."

CLL is a cancer in which white blood cells inexplicably divide and multiply at an uncontrollable, eventually fatal rate. The cells accumulate in the bone marrow and blood and eventually invade the lymph nodes and other lymphoid structures. CLL's predominant victims are the elderly; the average age at diagnosis is 60.

Although the disease is incurable, it can linger for 20 years or more; most of its victims live about six or seven years. CLL is symptomless at the onset, but as the white blood cells accumulate, its victims become more prone to infections. Most eventually die of intercurrent diseases associated with the elderly or of infections.

Most CLL patients are treated with chemotherapy, but few are helped significantly.

"Chemotherapy usually isn't very successful with CLL patients," Dr. Faguet said. "We make very little dent on their survival. There are so many of the malignant cells that it's like chipping at the tip of an iceberg, and this form of leukemia does not respond particularly well to chemotherapy."

The magic bullet he seeks just may change that.

In the late 1970s, Dr. Faguet and now-retired colleague Dr. Julia Agee began seeking a CLL antigen—a substance specific to the cancerous cells which would set them apart from healthy cells. They sought the antigen to be able to positively diagnose CLL. The work is currently funded by Augusta's Veterans Administration Medical Center.

About eight years ago, they isolated that antigen. "When we started, we weren't sure we'd be successful. But we were hoping," Dr. Faguet said.

They dubbed the antigen cCLLa (common CLL antigen). "It's like a protein. The malignant cells have that antigen on the surface," Dr. Faguet said. They isolated the cCLLa by developing antibodies that seek that antigen. These antibodies, called monoclonal because they are produced by cells that are clones of each other, recognize only the cCLLa.

To test for CLL, Dr. Faguet adds the antibodies to a blood sample. "If the antibodies find the antigen, they bind to it," Dr. Faguet said. "If there are no malignant cells, they won't bind to anything. Then, we wash off everything that didn't bind and add a second, fluorescent, antibody. The fluorescent antibody looks for the first

Dr. Guy Faguet probes research data in his office.

Inset shows microscopic view of "lit-up" cancerous cells.

antibody now attached to cancerous cells and binds to it. When looked at under a fluorescence microscope, the cancerous cells light up. Normal cells do not.''

That procedure is a nearly foolproof diagnostic tool. If no cells light up, the patient doesn't have CLL.

''The test is 100 percent so far and we've tested more than 100 patients,'' Dr. Faguet said. ''Normal individuals have never tested positive, and we've never had a false negative.''

The test is conducted exclusively on campus; samples from colleagues in and out of town are sent to Dr. Faguet for a diagnosis. ''We've tested three or four cases just in the last two days,'' he said.

But successful diagnosis is only one application of the test. ''We hope to use the antibodies to treat the disease,'' Dr. Faguet said.

One of the two monoclonal antibodies he works with has the ability to attract a series of serum proteins called ''complement'' to the cell surface. When that happens, a series of events occurs on the cell surface which kills that cell. Thus, injection of monoclonal antibody into patients with CLL would kill leukemia cells without affecting normal cells.

A second possible treatment is combining a chemotherapeutic agent or a toxin to the antibody. This antibody-agent combination is called an immunoconjugate or immunotoxin. ''This is really what 'magic bullet' refers to,'' Dr. Faguet said. ''The antibody seeks the cancer cells and the chemotherapeutic agent or the toxin kills them.''

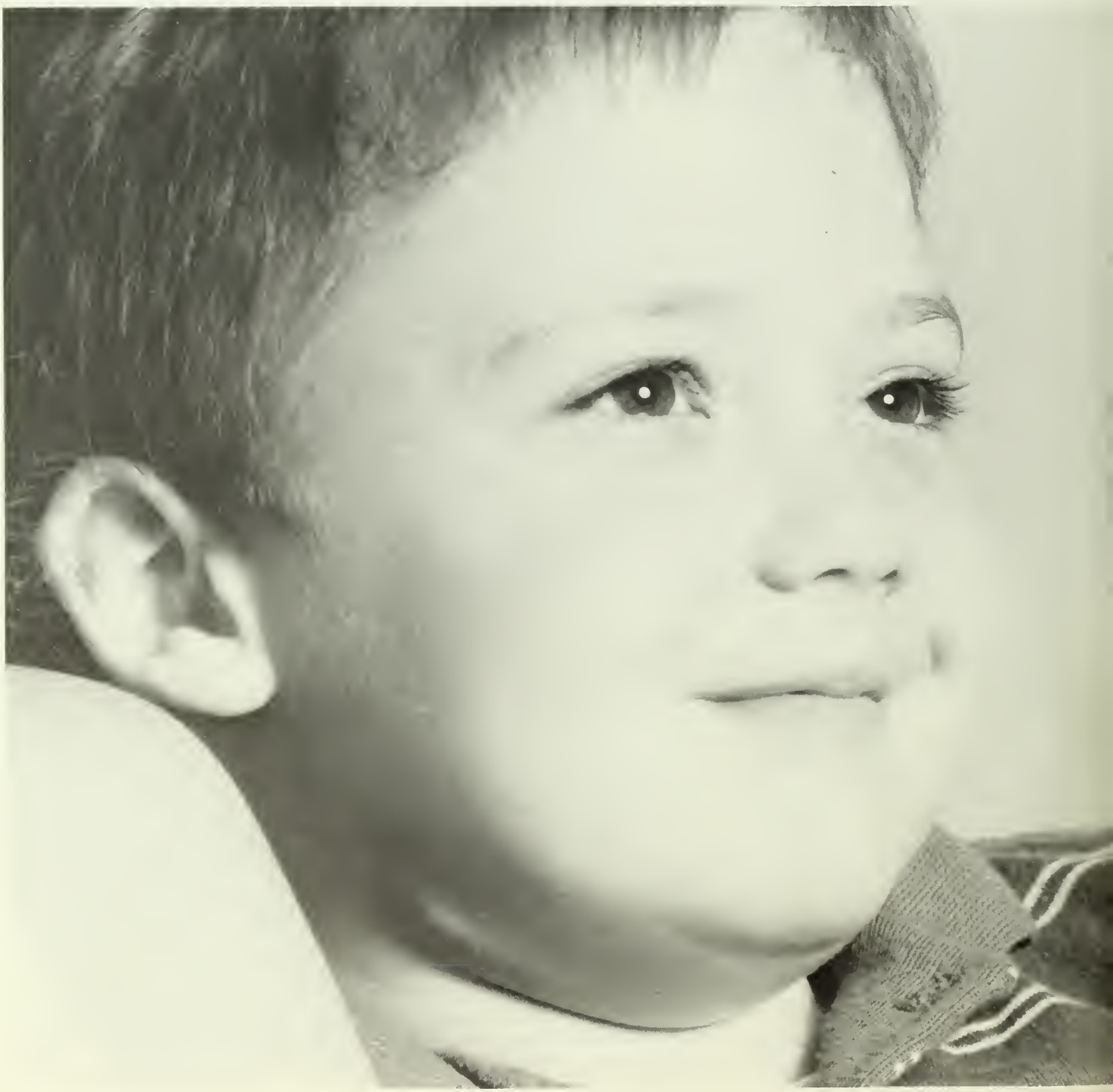
Normal chemotherapy has side effects because it affects all cells, not just the cancerous ones. If Dr. Faguet succeeds in developing effective magic bullets—those which would only kill malignant cells—then, ''theoretically, there would be no side effects,'' he said.

Even if his research is successful, however, he has little hope of curing those in the late stages of cancer. ''The cases I think might have a chance of a cure from this treatment are those with a small tumor mass,'' he said.

But his hopes for those cases are high. ''Clinical trials in humans might be just a year down the road,'' he said.

—Christine Hurley Deriso

A Family Fights Back



Before a physician ever used the word leukemia, Dr. Richard Beck and his wife, Linda, already were painfully suspicious.

"I have a big pathology book," said Dr. Beck, a 1983 graduate of the Medical College of Georgia School of Dentistry.

"We sat there and read it. Everything he had, night sweats, bruising, starting to run out of energy, all of those things were listed.

"We were hoping he had some kind of injury or something that would mimic it. But it definitely was on our minds," Dr. Beck said.

The Becks took their son to Gwinnett Medical Center in Gwinnett County, Ga., for initial testing. There, Richard had a blood test to time how long it took his blood to clot. It never clotted.

The adult hematologist/oncologist told the Becks they needed to see a pediatric hematologist/oncologist. He also told them that their son had leukemia.

"I just kind of went blank for 30 minutes," Dr. Beck said. "We had no idea what the outlook was. We assumed the worst."

The next morning, the Becks took their son to MCG.

That same day, June 23, 1988, bone marrow and chromosome tests determined the specific diagnosis—acute lymphocytic leukemia.

"I thought it was the last thing that would happen," Dr. Beck said of the leukemia. "I would not come home from work and say, gee, I hope we don't have cancer in the family."

Richard was a premature baby and spent his first 11 days in the hospital. But he hadn't been near one since.

"Once we got to the pediatric hematology/oncology clinic, everything was a lot clearer in terms of what was going to happen," Dr. Beck said.

It became clear that their son has a very good chance of living a long, normal life.

"When he presented here, he presented with a history of easy bruising and pallor," said Dr. P. Charlton Davis, chief of the MCG Section of Pediatric Hematology/Oncology. "He had the most common type of acute lymphocytic leukemia with the best prognosis."

The rigorous therapy kept Richard and his mother in Augusta most of the summer.

But the Becks were no strangers to the area.

Dr. Beck is a native of Jefferson County. Mrs. Beck's parents live in Martinez and she'd lived there with them for six years. Her father, Richard King, is a biomedical engineer in the MCG Department of Pathology.

Treatment began with the induction phase in which Richard received three drugs. Next, he went through the intensification phase during which he received four drugs.

Richard attained remission of his disease about one month after treatment began. If he remains in remission, he will remain on his current maintenance therapy of four drugs for three years.

"We know a powerful diagnostic factor is what the bone marrow looks like at 14 days, because if you have really responsive leukemia, at 14 days, you won't see any leukemia cells," Dr. Davis said.

"Then you look at the bone marrow after 28 days, when the child has finished the induction phase of treatment. If there are no leukemic cells, you say he is in remission," he said.

A bone marrow study is repeated at the end of the second month when the intensification phase is complete.

Bone marrow studies used to be conducted every three months for the three years of maintenance. Now, the studies are conducted during maintenance only if signs of leukemia return.

Dr. Davis, who has been in practice about 15 years, can remember when maintenance therapy lasted five years. But experience has shown that three years is just as effective. Dr. Davis anticipates the length will be further reduced.

He also can remember when a child with Richard's disease only lived about two years.

"We would predict that he has at least a 70 percent chance of being cured of his leukemia," Dr. Davis said. "We used to shy away from using the term cure. We'd say they would be long-term, disease-free survivors. But it really does appear that the kids that are long-term, disease-free survivors are going to be cured."

Richard should be healthy, Dr. Davis said, and he should one day be able to have healthy children.

"You do it because you have to do it. That's all there is to it," Dr. Beck said of the ordeal that began this summer and stretches out before them. "There isn't a day that goes by that we don't stand around going, 'Maybe we will wake up.'"

"The reason we are holding up is because Richard is holding us up," said Mrs. Beck. "We aren't holding him."

—Toni Baker

Photos on pages 18–20 illustrate Dr. P. Charlton Davis' work with pediatric hematology/oncology patients Sean Fort (pages 20,21) and Ronald Royal (pages 18, 21).

A Medical College of Georgia doctor is the institution's link to a group whose studies help treat over half of MCG's pediatric oncology patients each year.

Dr. P. Charlton Davis, chief of the Section of Pediatric Hematology/Oncology, is MCG's principal investigator for the Children's Cancer Study Group. The group combines the cancer research of 100 institutions nationwide and prepares protocols for new cancer treatments. These protocols are published in book form and are discussed by the investigators at national group meetings.

The group's studies follow specific phases. In phase I, study investigators examine new agents that have been through laboratory trials and are beginning to be used in humans, Dr. Davis said. In this phase, the agent is evaluated for its toxicity in humans.

The goal in phase II studies is to establish which tumors respond and the dosage that patients can tolerate, he said. In a phase III study, the agent is incorporated into a front-line treatment protocol. The patient's response to the treatment is tested, Dr. Davis said. The agents also are combined with other proven treatments during phase III to provide the best possible chances for cure.

Last year, MCG enrolled 25 pediatric oncology patients in the Children's Cancer Study Group studies.

Enrollment in a study increases a patient's chance of a cure. ''It has been shown that if a patient is treated

Paving the Way

Those involved in MCG's Children's Cancer Study Groups are helping not only themselves, but future generations of children who may never have to contend with the horrors of cancer because of their participation.

on a protocol, things will be done in a timely manner. It's known that if patients are treated on study, their end results will be better than patients not treated on study," Dr. Davis said.

To qualify for membership in the group, an institution must meet many criteria. It must have a program that specializes in the treatment of pediatric oncology and must be associated with a hospital that has a children's facility, Dr. Davis said.

The staff must include a pediatric oncologist and a pediatric oncology nurse, as well as pediatric subspecialists in the areas of cardiology, pulmunology, infectious disease, nephrology and pharmacology, to name a few. The institution also must have a principal investigator committed to supporting the group and to enrolling patients in the open studies, he said.

The advantages of membership are many, Dr. Davis said.

"It gives MCG the opportunity to be on the cutting edge of clinical research for the treatment of childhood cancer. It makes available to our patients the latest protocols and access to the latest agents for the treatment of childhood cancer. And it allows MCG to get credit for the activities that we are involved in for the group," he said.

Each study explores how therapy can be improved to cure more patients, Dr. Davis said. "Clinical trials are very important if we are going to one day reach the goal of curing all types of cancer," he said. "If we could prevent cancer, we wouldn't have to treat it, so we're looking at factors in the environment that might predispose to cancer. We're also looking at some specific infections to see if they predispose to cancer."

The treatment of childhood cancer has come a long way, Dr. Davis said. "With the type of therapy available today, most children with cancer have complete response and over half will be cured," he said.

"Now we have a number of agents that are effective and we use combinations that are very effective. Yes, we have side effects, but usually they're manageable and not life-threatening."

A number of checks and balances must be met before a study is open for patients, Dr. Davis said. First, the National Cancer Institute has a review board that studies each of the group's protocols—which have already been reviewed and approved by every investigator in the group.

Once the National Cancer Institute approves the protocol, the MCG Institutional Review Board studies it. The board includes basic scientists, clinicians, nurses, social workers, psychiatrists, members of the clergy, an attorney and a teacher.

The board looks at the benefits of the treatment and the side effects that will accompany it, Dr. Davis said.

"Some side effects are severe," Dr. Davis said. "But we have a disease that's going to be fatal untreated. The treatment (up to this point) was the best available."

Dr. Davis believes that treating children with cancer is a profession filled with hope.

"Cancer has a lot of emotion associated with it. It has a lot of fear associated with it. It's still thought of as a disease that's going to kill you, and getting people to believe that it's not going to kill you is sometimes very difficult," Dr. Davis said. "They say their grandmother died of it, or their father died of it."

Dr. Davis noted differences in adult and childhood cancer.

"The types of cancer adults get aren't very treatable by and large. But the types of cancer that children get are curable in over half the cases. In children, you are dealing with a disease that's more responsive to therapy," he said.

Children and adults with the same type of cancer respond differently because of biological factors, Dr. Davis said.

"And kids can tolerate much more medicine per weight than an adult can," he said.

Adults with cancer usually have other diseases such as heart, lung and kidney disease, Dr. Davis said. "They have other compromising factors that make them not tolerate therapy as well."

"The other thing is that children... don't have near the side effects the adults have, and that probably has something to do with the brain," he said. Adults tend to have preconceptions about the therapy that children don't have.

—Karin Calloway

The "C

No, it isn't "cancer"—it's "cure." And that word is used more often than ev

Dr. P. Charlton Davis talks readily about cures.

"Every child who has leukemia ought to be looked at as curable," said the chief of the Section of Pediatric Hematology/Oncology at the Medical College of Georgia.

"It used to be that none of them were cured," he said. "But within the last 15 years, we have (developed) effective therapy and the cure rate is increasing."

Advances such as new drug treatment protocols that make the most of knowledge from this and other countries and the use of bone marrow transplantation have given children the edge against this diabolical disease.

Today, a child given the latest treatment has a 60 to 80 percent chance of being cured of this cancer, the most common of all childhood cancers.

"You start with one leukemia cell and it divides and makes two and then four and then eight," Dr. Davis said. It may take several months for enough cells to be produced to evoke symptoms. That may mean more than two pounds of cells already are present before the first symptom.

When the symptoms come, they can seem non-specific: weakness, paleness, lack of energy.

"You can look at this disease as a great imitator of other diseases," Dr. Davis said.

Even a blood test may not reveal the disease. "You can have leukemia and have a lot of leukemia cells before you ever have a decrease in your blood counts," Dr. Davis said. "So it's hard to diagnose early."

The diagnostic test is a bone marrow study in which physicians look at the factory where white cells, red cells and platelets are made to detect any abnormal proliferation.

At the MCG Cancer Cytogenetics Laboratory, chromosomes taken from the child's bone marrow are studied to determine the specific type of leukemia the child has and its cell of origin.

Basically, there are two types of leukemia: lymphocytic, which is more common in children, and myelocytic.

Expanding knowledge of this disease has allowed physicians with the help of cancer cytogeneticists to subdivide the leukemias, noting subtle differences in chromosomes, the packages of DNA that are inside each cell. These differences affect the way a child responds to treatment.

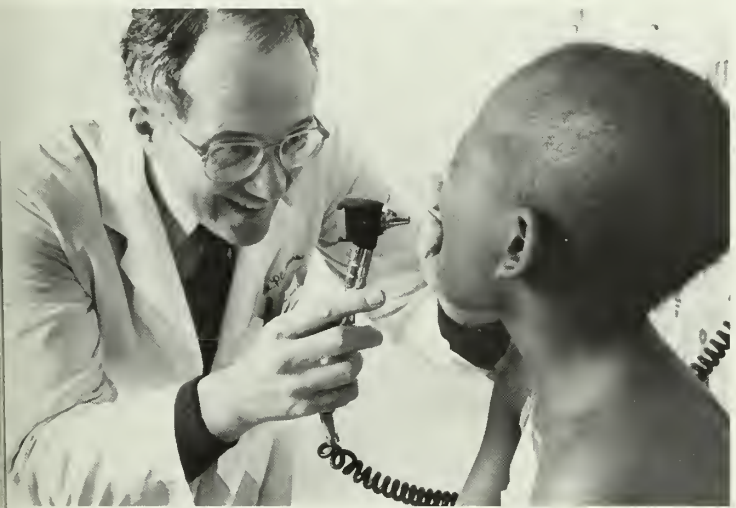
Dr. Davis said it's a matter of dividing and conquering.

"We are past saying this is acute lymphocytic leukemia. We have dissected it down to the point where we say, OK, if you have this feature, we better treat them this way. Eventually, we are going to cure 99 percent of them."

This disease, which comprises 30 percent of all childhood cancers, is obviously different from its adult

''Word

ıong those at the Medical College of Georgia who care for children with cancer.



counterpart—different in ways that favor children.

''We know that the cell that develops leukemia is different in adults than in kids in most cases,'' Dr. Davis said. ''We know that more adults have chromosomal abnormalities that portray a bad prognosis than children.''

Also in adults, myelocytic leukemia is more common than lymphocytic. The opposite is true in children.

Causes of childhood leukemia are just beginning to be understood. A handful of syndromes, such as Down's syndrome, are associated with leukemia. Children born without intact immune systems tend to get this disease. Still, these known associations account for only about 1 percent of the disease victims. Doctors are just beginning to learn that the retroviruses responsible for AIDS also can cause leukemia.

The arsenal to fight this childhood disease includes drugs and bone marrow transplantation.

New drugs and new ways to use existing drugs have increased survival rates. MCG's involvement with the Children's Cancer Study Group makes the latest drug and treatment protocols available to children at MCG.

Physicians at MCG also make the most of experiences learned by their counterparts in other countries, comparing those to experiences in the United States.

Drugs are given in three stages. The induction stage is the first attempt to rid the body of leukemic cells. That typically is followed by an intensification stage during which cancerous cells are bombarded.

Patients are then put on a maintenance therapy, a therapy that can last years with the idea of killing every leukemic cell. When patients relapse, it indicates that they have become resistant to maintenance therapy and doctors need to begin a new chemotherapy program.

Bone marrow transplantation further enhances cure rates of children, but this process is limited by the fact that only about a third of children who could receive this form of therapy have a compatible donor.

Still, Dr. Davis is adamant that this aspect of care should be offered at MCG.

At present, he and the other pediatric hematologists/oncologists at MCG must send patients to other states, primarily Florida, Washington and Minnesota for the therapy.

''We want it. We need it,'' Dr. Davis said. ''It's a new therapy that is very beneficial for patients who have certain types of cancer. I don't think it's going to become less used. I think it's going to become more used.''

—Toni Baker

New Technology Takes Center Stage

The Medical College of Georgia is better prepared to fight cancer than ever before because of a new device called the Clinac 1800 linear accelerator.

The accelerator, located in the Georgia Radiation Therapy Center at MCG, is used to administer radiation treatments to patients with cancer or severe scar tissue resulting from accident or injury.

Even though the technology is essentially identical to that used to operate three accelerators previously used at MCG, the new device allows doctors greater flexibility in treatment and increases their ability to treat more patients faster.

The accelerator cost about $1 million and was installed in March. Installation took more than a month—the device weighs more than 15 tons. But despite the expense and trouble, it is an essential investment, according to Steve Adams, administrative manager of the Georgia Radiation Therapy Center.

The accelerators are relatively uncommon, Mr. Adams said. The closest ones to Augusta are in Athens, Ga., and Columbia, S.C., so the MCG accelerator treats people from about a 100-mile radius. Patients who need the treatment are referred to or brought from other hospitals.

Radiation therapy was determined in the 1970s to be one of the health care community's best defenses against cancer. In 1980, the Georgia Board of Regents approved funding for the center at MCG. Thousands have been treated there since, Mr. Adams said.

But despite the life-saving capabilities of such technology and the fact that it has been used for more than 50 years, negative opinions about radiation are pervasive, he said. Part of the concern is traced to the fact that many people associate radiation with nuclear power plants or reactors—an unfounded fear, Mr. Adams said.

"This is more a controlled radiation," he said. "They pinpoint the depth and dose going into the body."

Another source of the fear is the fact that patients are left alone while the beam is on during radiation treatment. Doctors and technologists leave the room to avoid overexposure. The giant radiation machine can seem monstrous when faced alone, Mr. Adams said. To counteract the fear, the center recently produced a videotape explaining the procedure and possible side effects. From the time a patient walks in the door until he leaves, he knows what to expect. ■

—David Waller

A

B

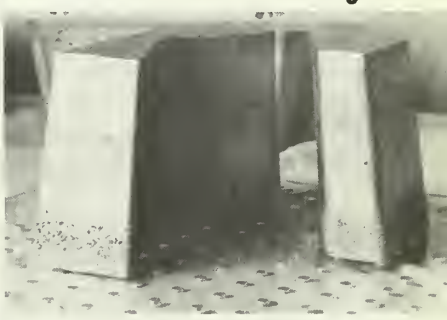
***A.** Patient watches videotape explaining radiation therapy she will undergo.*

***B.** Simulator isolates area to be treated.*

***C.** Simulator's results: a custom-made block for patient's treatment. Block will prevent radiation beam from hitting healthy tissue.*

***D.** Treatment room. The Clinac 1800 linear accelerator will administer the radiation.*

C



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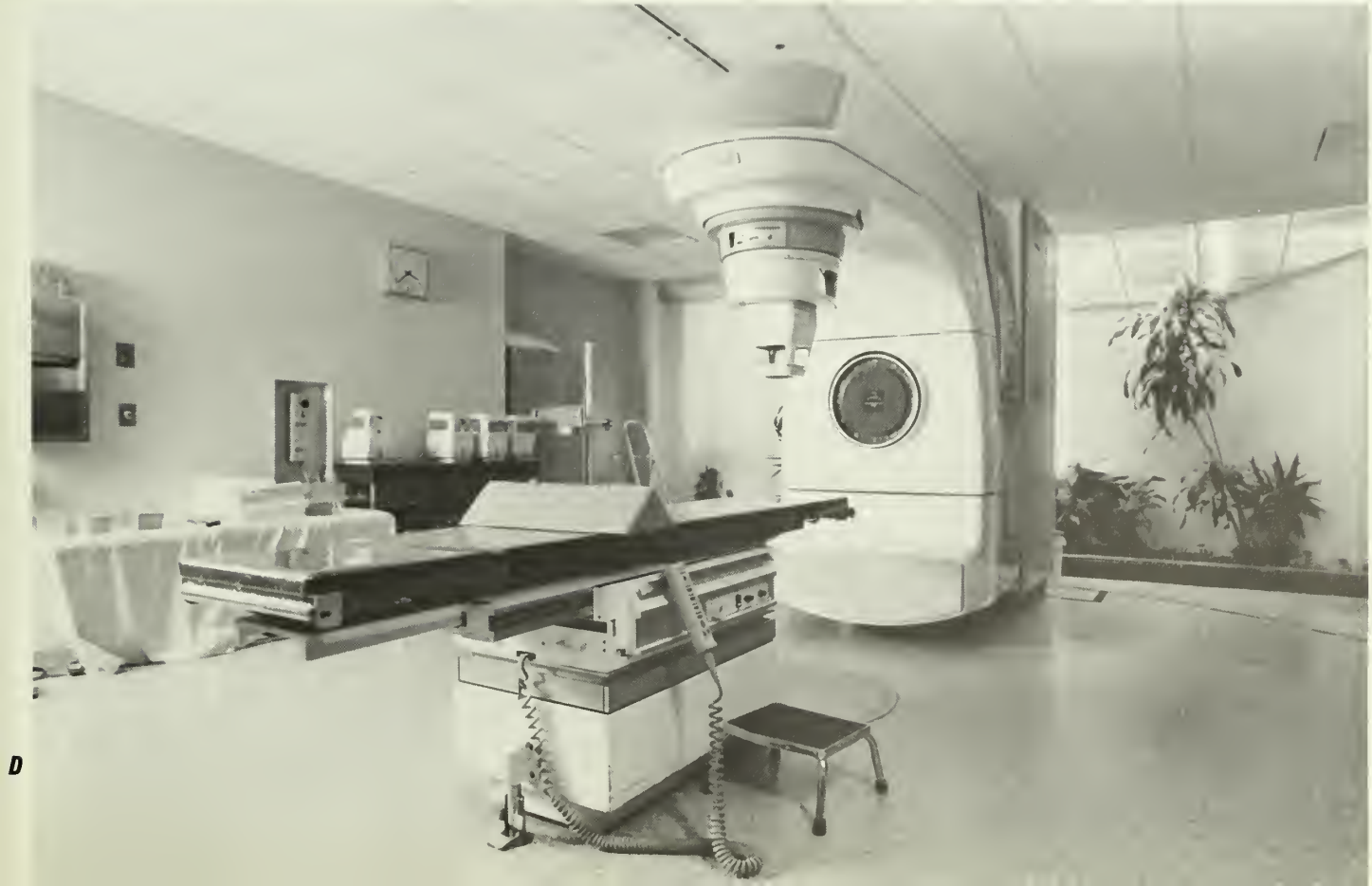

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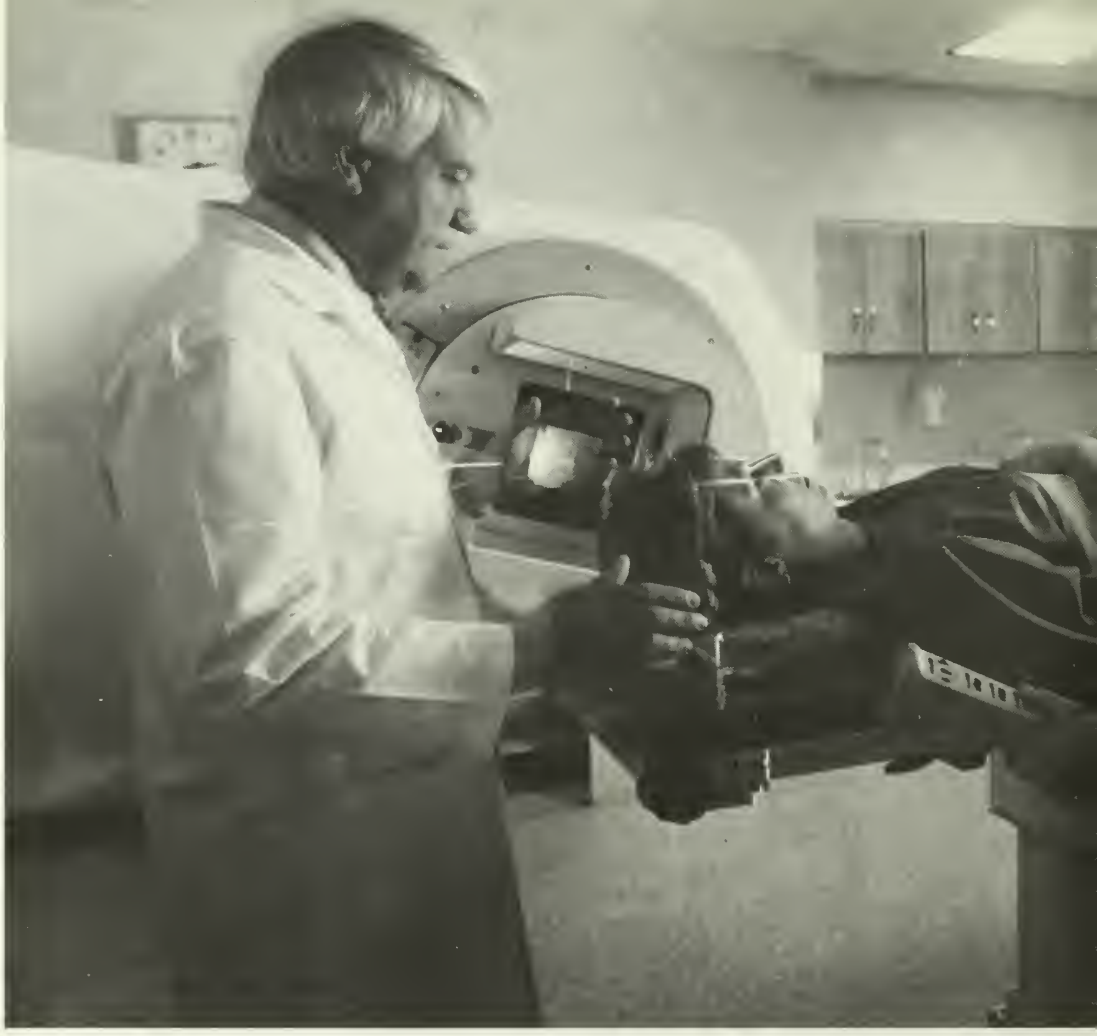


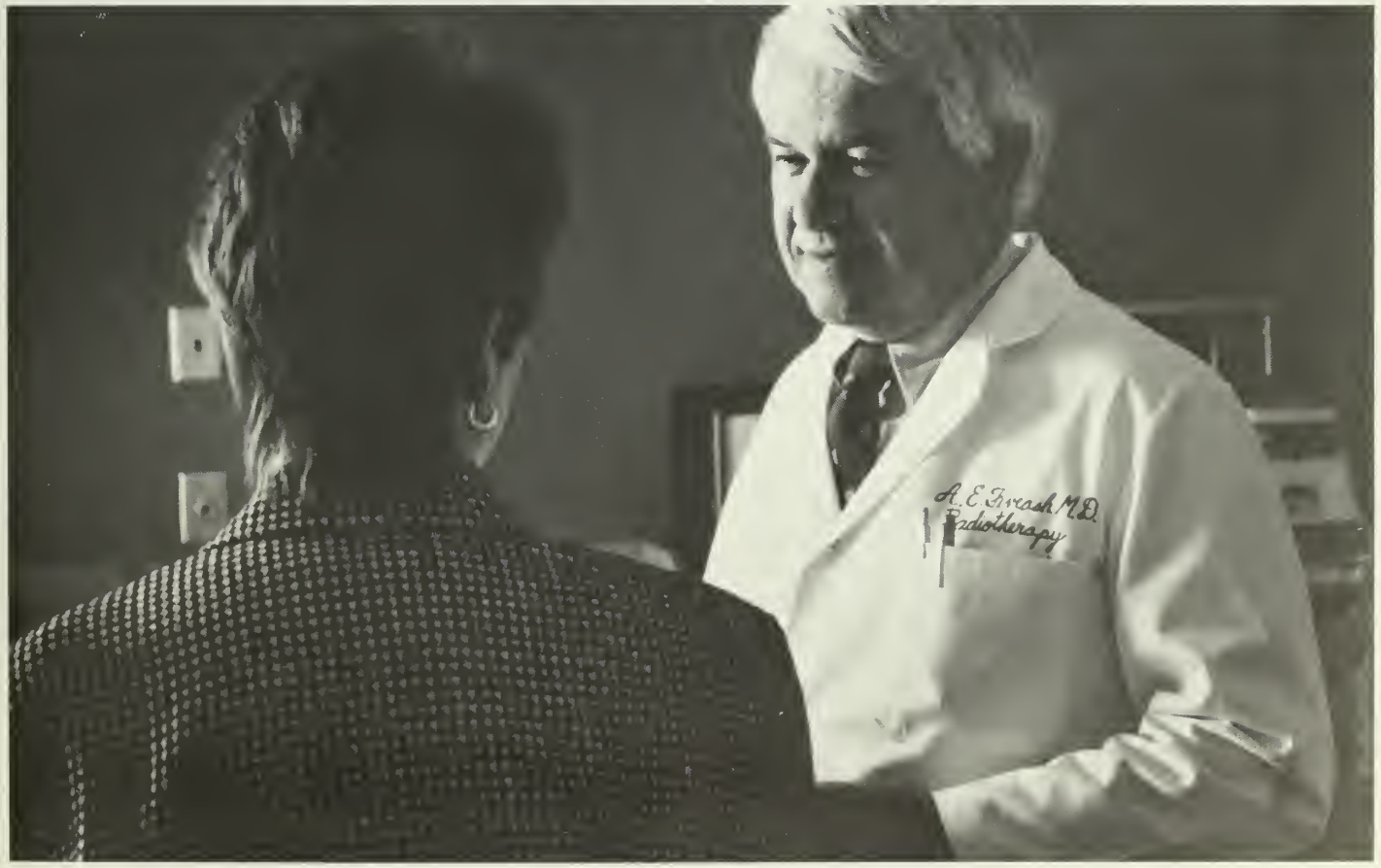
E. *Dr. Arlie Fiveash, technologist place patient in the accelerator and prepare her for radiation treatment.*

F. *Technician administers treatment from console area outside the treatment room. Screen allows her to monitor the patient.*

G. *Dr. Fiveash confers with patient after radiation treatment.*

F

G



Where There's a Will

". . . The scope of cancer is so vast, its ramifications and complexities so great and its treatment so varied that no one man, no matter how versatile, could ever hope to master the whole subject of diagnosis and treatment."

The priorities of Dr. Guy Talmadge Bernard, the man who wrote those words in 1942, never wavered.

He was committed to the care of cancer patients and had little time or patience for any circumstances that might obstruct that goal. When those obstructions presented themselves, he simply went about the work of removing them. Such was the nature of Dr. Bernard, a past Medical College of Georgia faculty member who helped found University Hospital's cancer clinic.

Dr. Bernard, born in Athens, Ga., in 1881, earned his medical degree from the Medical Department of the University of Georgia (now MCG) in 1907. After graduation, he joined the school's faculty as assistant to the chair of anatomy. He was named instructor in dermatology in 1913 and was promoted to assistant professor of surgery in 1921. Two years later, he was named clinical professor of surgery and dermatology.

Around this time, Dr. Bernard secured a supply of radium which he used on private and clinical patients for skin conditions and cancer.

He began a cancer clinic at University Hospital (then MCG's teaching hospital) in 1922, but ". . . it was badly organized," he wrote in a 1942 edition of the Journal of the Medical Association of Georgia. "X-ray and radium equipment were below par, there were no staff meetings, no secretary, no proper records and no follow-up."

Even at that early point in his career, he realized the necessity of a team approach to cancer treatment. "The time has come when the term 'cancer specialist' is a misnomer," he wrote. Cancer patients needed the service of ". . . a surgeon, radiologist, pathologist and as many others as may be available."

He committed himself not only to pooling resources, but to offering those resources to everyone with cancer, including "the great mass of poor people," he wrote.

Although Richmond County footed the bill for its own indigents, out-of-county indigents often were out of luck. "It was a most difficult and, at times, heart-sickening task to get them into the hospital," Dr. Bernard wrote in the journal article.

But despite the difficulties, he forged ahead. A turning point for the clinic came in 1929, when the American College of Surgeons began determining standards for cancer clinics. (Dr. Bernard was named a fellow of the college in 1918.) University Hospital formalized the clinic, which was named the Bernard Tumor Clinic in his honor.

"When the American College of Surgeons pointed the way, Dr. (William H.) Goodrich, dean of the medical college, and Dr. (Carlisle) Lentz, superintendent of the University Hospital, authorized the organization of a cancer clinic," Dr. Bernard wrote. "From our small nucleus, this organization was effected and we at once began to aspire to the (college's) approved list of clinics. This was attained in 1938."

Also during that time, the State-Aid Cancer Control Service was formed in Georgia to ensure cancer treatment for all indigents at the state's expense.

By this time, the clinic staff included a pathologist, radiologist, radium therapist, professor of surgery and medicine and other specialists. The clinic's effectiveness rapidly earned a national reputation.

Dr. Francis Carter Wood, then-director of the Institute of Cancer Research of Columbia University, visited the clinic around this time and wrote, "I know that Georgia is a poor state, that it has no very rich people and no heavily endowed institutions. But when I see this large number of patients and the character of the work done, I think it is swell."

Dr. Bernard was named emeritus clinical professor of surgery (cancer) in 1958. School records do not indicate he received any salary from the school for his services as faculty. (He had a private practice throughout his career.)

That year, University Hospital dedicated a new wing which included a library, office space and a doctor's lounge. The structure was funded by the cancer clinic and designated the Bernard Wing. During the dedication, Dr. Bernard presented to the library a reproduction of Rembrandt's "The Anatomy Lesson." This copy of the 1632 painting was brought to Augusta from Europe by a founding MCG faculty member, Dr. Paul F. Eve, around the middle of the nineteenth century, and eventually passed on to Dr. Bernard by the Eve family.

Dr. Bernard died Dec. 22, 1960. He and his wife, Juanita, had no children and he left a $10,000 endowment to MCG.

—Christine Hurley Deriso

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